WHAT IS CLAIMED IS:

1. A method of producing a complex oxide thin-film comprising the steps of:

(a) providing a metal compound solution comprising at least two metal compounds dissolved in a solvent;

(b) atomizing the metal compound solution in a two-fluid nozzle, and directly introducing the atomized solution into a film-forming chamber in which the pressure is about 100 Torr or lower and having a substrate therein, and

(c) forming a complex oxide thin-film on a substrate in the film-forming chamber to a temperature equal to or higher than the boiling point of the solvent.

2. A method of producing a complex oxide thin-film according to claim 1, wherein the solution is atomized in the two-fluid nozzle with an oxidative gas.

3. A method of producing a complex oxide thin-film according to claim 2, wherein the solvent has a boiling point of at least about 100°C under ordinary pressure.

4. A method of producing a complex oxide thin-film according to claim 3, wherein at least one of the metal compounds is a dipivaloylmethanato complex.

5. A method of producing a complex oxide thin-film according to claim 4, wherein at least one of the metal compounds is an acetylacetonato complex.

6. A method of producing a complex oxide thin-film according to claim 5, wherein the solution contains three metal compounds and at least one of the metal compounds is a metal alkoxide.

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7. A method of producing a complex oxide thin-film according to claim 6, wherein the film-forming (c) is performed at least two times, and after each film-forming, the film is heat-treated under a pressure lower than that employed for the film-forming.

8. A method of producing a complex oxide thin-film according to claim 7, wherein at least the film obtained after the final film-forming is heat treated at an oxygen gas partial pressure higher than an oxygen gas partial pressure existent during film-forming.

9. A method of producing a complex oxide thin-film according to claim 1, wherein the solvent has a boiling point of at least about 100°C under ordinary pressure.

10. A method of producing a complex oxide thin-film according to claim 1, wherein at least one of the metal compounds is a dipivaloylmethanato complex.

11. A method of producing a complex oxide thin-film according to claim 1, wherein at least one of the metal compounds is an acetylacetonato complex.

12. A method of producing a complex oxide thin-film according to claim 1, wherein at least one of the metal compounds is a metal alkoxide.

13. A method of producing a complex oxide thin-film according to claim 1, wherein the film-forming is performed at least two times, and after each film-forming, the film is heat-treated under a pressure lower than that employed for the film-forming.

14. A method of producing a complex oxide thin-film according to claim 1, wherein at least the film obtained by the final film-forming is heat treated at an oxygen gas partial pressure higher than an oxygen gas partial pressure existent during film-forming.

15. An apparatus for producing a thin-film for use in carrying out the method of producing a complex oxide thin-film of claim 1, comprising:

a metal compound solution feed;

a two-fluid nozzle communicating with the solution feed and adapted to put the metal compound solution into an atomized state;

a film-forming chamber communicating with the nozzle;

a substrate heater communicating with the chamber; and

a pressure-reducing pump adapted to reduce the pressure in the film-forming chamber to 100 Torr or lower communicating with the chamber.

16. The apparatus of claim 15, wherein the two-fluid nozzle comprises a pair of concentrically disposed tubes.

17. The apparatus of claim 16, further comprising a gas feed communication with the two-fluid nozzle.

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18. The apparatus of claim 15, further comprising a gas feed communication with the two-fluid nozzle.